THE RELATIONSHIP OF BLOCK SCHEDULING TO STUDENTS' ACADEMIC ACHIEVEMENT WHEN CONSIDERING ETHNICITY IN FOUR SOUTHEASTERN HIGH SCHOOLS

By

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THE RELATIONSHIP OF BLOCK SCHEDULING TO STUDENTS' ACADEMIC ACHIEVEMENT WHEN CONSIDERING ETHNICITY IN FOUR SOUTHEASTERN HIGH SCHOOLS

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The purpose of this study was to determine if there was a relationship between block-scheduling and academic achievement of high school students when considering ethnicity. For this study ethnicity was divided into two categories, black and white, as defined by the U.S. Census Bureau. Academic achievement was defined as reading and math scores on the Florida Comprehensive Assessment Test (FCAT). Traditional-scheduling was defined as a six-period day with classes meeting daily for 60 minutes for two semesters each year. Block-scheduling was defined as four classes each semester in blocks that last between 85 to 100 minutes each.

One two-way ANOVA and six one-way ANOVA's were performed to determine if a significant difference in reading and math FCAT scores existed within and between scheduling and ethnicity. The sample consisted of 724 black and 382 white tenth grade students who were in their second year at one of the test schools. In this study, the independent variables were scheduling and ethnicity, and the dependent variables were reading and math FCAT scores.

Analyses of the data showed that the interaction between scheduling and ethnicity had no statistically significant effect, thus supporting an increasing body of literature. Results of this analysis indicated that students in the traditional-scheduling groups performed better than students in the block-scheduled groups. Follow-up analysis suggested that this effect may have been more pronounced for black students than for white students, but failure to detect a significant two-way interaction preceded this conclusion.

CHAPTER 1
OVERVIEW OF THE STUDY

Introduction

During the decades of the 1980s and 1990s the traditional schedule has come under intense scrutiny by many educators (Canady & Rettig, 1995; Canady & Rettig, 1996; Carroll, 1990; Fisher & Berliner, 1985; Goldman, 1983; Hottenstein, 1998; Huyvaert, 1997; Jenkins, 1996; Jones, 1995; Schoenstein, 1995; Shortt & Thayer, 1995). Additional time in the classroom, a reduction in the number of classes for which students must prepare and attend each day, reduction in the fragmentation of single-period days, varying the length of courses, integrating curriculum, providing authentic learning environments, and saving money were some of the reasons educators desired changing from a traditional schedule (Canady & Rettig, 1995; Canady & Rettig, 1996). The National Commission on Excellence in Education (1983) addressed concerns about the poor use of class time in American schools. The Commission's recommendations included increasing and restructuring class time for more effective use (National Commission, 1983).

The National Education Commission on Time and Learning, created by Public Law 102-62, designed an independent advisory board that called for a comprehensive review of the relationship between time and learning in the nation's schools. The National Education Commission on Time and Learning (1984) published a report on the topic of time and instructional effectiveness in American schools. The commission concluded that time was the missing element in what became a national debate about learning and the need for higher standards for all students (National Education, 1994). Several of the recommendations included increasing the academic day, implementing a more flexible use of time, and modifying schedules to respond to changes that have reshaped American life outside of school parameters (National Education, 1994).

In the United States, the typical high school operates on a traditional schedule. The traditional schedule refers to the plan in which the school day is divided into six classes of approximately 50 to 60 minutes each, lasting two semesters (the complete school year). Although the traditional schedule remains more widely used than the block schedule, interest in alternative scheduling has revitalized a concern over the effectiveness of traditional scheduling. "The traditional schedule with 45 to 55 minutes each day does not facilitate the completion of in-depth learning tasks" (Jenkins, 1996, p. 146).

As school administrators look for alternatives to replace traditional scheduling, the popularity of block scheduling with class times lasting between 85 to 120 minutes each has increased. Cawelti (1994) conducted a national survey conducted on the use of block scheduling. With 33% of the schools responding, 11% reported that block scheduling was "in general use"; 12% reported that it was "partially implemented"; 15% reported that block scheduling was planned for the next school year; and 61% reported that block scheduling was "not planned for next year" (P. 23). Calwetti defined block scheduling as follows, "At least part of the daily schedule is organized into larger blocks of time (more than 60 minutes, for example) to allow flexibility for varied instructional activities" (p. 23). In Virginia, 46% of the schools reported implementing block scheduling (Rettig, 1995). In 1996, the estimate was over 50% of United States high schools were using or studying some form of block scheduling (Canady & Rettig, 1996).

The basic structures of block scheduling, such as increased class time and fewer class changes, are the principles and strategies that many educational researchers believe are necessary for increasing student improvement (Hottenstein, 1998).

During the decades of the 1980s and 1990s, as educators debated and researched the effectiveness of scheduling on students' academic achievement, politicians moved forward in implementing state standardized assessment tests as a method of determining students' academic achievement. The assessment tests are, ideally, the procedure of gathering information for the purpose of making knowledgeable decisions (Airasian, 1991).

The Florida Comprehensive Assessment Test (FCAT) was designed to test all Florida fourth, fifth, eighth, and tenth grade students in reading and mathematics. The FCAT was first given in 1998 and was developed to measure students' academic achievement comparative to the Sunshine State Standards (Florida Department of Education, 1998a).

Federal government reports and research conducted during the decades of 1980s and 1990s demonstrated that extending the time spent in class can help influence the academic achievement of students, particularly grades, grade point averages, and assessment tests (Buckman, King, & Ryan, 1995; Edwards, 1995; Eineder & Bishop,1997; and Hottenstein & Malatesta, 1993).

Although research has shown block scheduling to be at least as effective as traditional scheduling when comparing academic achievement, the needs of students based on ethnicity must be at the forefront of the decision-making process (Edwards, 1995; Geismer & Pullease, 1996; Gusky & Kifer, 1995). In an era in which school districts continue to be removed from court ordered desegregation, the importance of scheduling should not rest on academic achievement alone. More quantitative studies measuring the effects of scheduling on academic achievement, when compared by ethnicity, are needed to determine the significance of scheduling and to add to the knowledge base for educational leaders.

Problem Statement

In 1998 the Florida Comprehensive Assessment Test (FCAT) was introduced as a measure of academic achievement. As educators focused on methods to prepare their students for success on the FCAT, the debate continued over which method of scheduling provided students their best opportunity to succeed academically.

Research was needed to determine if scheduling, when compared by ethnicity, was significant to academic achievement. A quantitative study comparing students' academic achievement on block scheduling to students' academic achievement on traditional scheduling should help to determine the significance of block scheduling to academic achievement.

The Purpose

The purpose of this study was to determine whether there was a relationship between block scheduling and the academic achievement of high school students when compared by ethnicity. Specifically, the study was designed to investigate how the independent factor of high school scheduling was associated with tenth grade FCAT scores when compared by ethnicity.

Research Questions

Answers to the following questions were sought:

Is there a significant difference in the FCAT scores of students attending a block scheduling school compared to students attending a traditional scheduling school when considering ethnicity?

To help answer this question, the following sub-questions were examined:

1. Is there a significant difference in the FCAT scores of students attending a block-scheduled school compared to students attending a traditional-scheduled school?

2. Is there a significant difference in the FCAT scores of white students attending a block-scheduled school compared to white students attending a traditional-scheduled school?

3. Is there a significant difference in the FCAT scores of black students attending a block-scheduled school compared to black students attending a traditional-scheduled school?

4. Is there a significant difference in the FCAT scores of white students compared to black students?

5. Is there a significant difference in the FCAT scores of white students attending a block-scheduled school compared to black students attending a block-scheduled school?

6. Is there a significant difference in the FCAT scores of white students attending a traditional-scheduled school compared to black students attending a traditional-scheduled school?

The Significance of the Study

The results of the study were intended to help educators better understand the effect of scheduling on academic achievement when compared by ethnicity. When the administrative team decides the scheduling for their school, the importance of the effects of scheduling on academic achievement should mirror the importance of the effects on minority students.

Jencks and Phillips (1998) reported that black children enter school with fewer reading and math skills than white students, and continue to fall further behind through primary and middle school. Currently, blacks score lower than whites on mathematics, reading, and vocabulary tests, including scoring below 75% of the white students on standardized tests. Jencks and Phillips (1998) research indicates that there is no genetic evidence of an innate cognitive difference between blacks and whites, thus suggesting that the student's environment has far more impact on test performance than genes.

The study was also designed empirical evidence on the effect scheduling has on achievement when compared by ethnicity. Currently, the most sophisticated studies available do not explain the effect scheduling has on the gap in test scores.

Limitations and Delimitations

1.The data gathered for the study included tenth grade students enrolled in four studied southeastern high schools. The study was limited to black and white tenth grade students in their second consecutive year at one of the tested high schools who had not repeated a grade, had not transferred in, had not attended a middle school using block scheduling, and had both reading and math tenth grade FCAT scores.

2. The school board provided all tenth grade FCAT scores. All data collected for the study remained anonymous.

3. Data were collected from black and white students only. The total population of Hispanic, Asian, Indian, and multicultural students in these schools represented only 4.5%. That percentage was too small to get stable estimates for the study.

Definition of Terms

The following terms are defined as used in the study:

Academic Achievement refers to the increase or decrease in the mean student scores on the Florida Comprehensive Assessment Test (FCAT).

Black refers to a person having origins in any of the black racial groups of Africa (Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity, 1997).

Block Scheduling refers to the 4 x 4 block where students take four classes each semester in blocks that last between 85 to 100 minutes each.

Ethnicity refers to ethnic character, background, or affiliation. For this study only black and white ethnic backgrounds were represented.

Florida Comprehensive Assessment Test (FCAT) refers to a test designed to measure student achievement relative to the Sunshine State Standards.

Sunshine State Standards (SSS) refers to the standards adopted by the Florida State Board of Education in May 1996. Those standards were based on a statewide consensus of what parents, educators, businesses and community leaders felt students should know and be able to accomplish at each level of their education (Florida Department of Education, 1998b).

Traditional scheduling refers to the plan in which the school day is divided into six classes of approximately 60 minutes each, lasting two semesters or the complete school year.

White refers to a person having origins in any of the original peoples of Europe, the Middle East, or North Africa (Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity, 1997).

Summary of the Chapters

Chapter II contains a literature review in which the relationship between block scheduling and academic achievement when compared by ethnicity are discussed. Included are discussions on research studies on block and traditional scheduling, state level testing, including the Florida Comprehensive Assessment Test, and literature related to ethnicity and academic achievement.

Chapter III contains the methodology of the study. Included in the chapter is the purpose, the study design, selection of the subjects, instruments, data collection, data analysis, and threats to validity and reliability.

Chapter IV contains the results of the quantitative tests reported in Chapter III.

Chapter V contains a summary of the study and a discussion of the implications of the findings in Chapter IV.

CHAPTER 2
REVIEW OF RELATED LITERATURE

Introduction

This study was an investigation of the relationship between block scheduling and academic achievement of high school students. Specifically, the study investigated how high school scheduling, either 4 x 4 block or traditional, was associated with achievement on the Florida Comprehensive Assessment Test. This review of related literature begins with an examination of traditional and block scheduling. Included is a history of related research investigating attendance, class grades and grade point averages, achievement tests, school climate, and state mandated requirements as they relate to scheduling. Finally the review of literature closes with a summary of scheduling and its effects on academic achievement.

Traditional Scheduling

The traditional schedule used in American high schools was developed in the early part of the twentieth century. Recommendations of the National Education Association Committee of Ten and the development of the Carnegie Unit have been cited as the foundation for the traditional schedule (Canady & Rettig, 1995). One result of the work of the Committee of Ten was to encourage every high school to center the work of each student upon five or six academic areas in each of the four high school years (Gorman, 1971). The proposal of the Carnegie Foundation was to measure high school work based on time. "The traditional schedule with forty-five to fifty-five minutes each day does not facilitate the completion of in-depth learning tasks" (Jenkins, 1996, p. 146). Therefore, each subject met for a total of 120 hours earning the student one unit of high school credit. The students attended class four or five times a week, for 40 to 60 minutes, and for 36 to 40 weeks each year. The Carnegie Unit became and continues to remain a convenient, mechanical way to measure academic progress throughout the country (Boyer, 1983).

In the United States, the typical high school operates on a traditional schedule. The traditional schedule refers to the plan in which the school day is divided into six, seven, eight, or nine daily periods. The six-period classes run approximately 50 to 60 minutes each; the seven-period classes run approximately 45 to 52 minutes; the eight-period classes run approximately 40 to 48 minutes. In all four cases, the duration of the classes is two semesters, or the complete school year. For this study, traditional schedule refers to the plan in which the school day is divided into six classes of approximately 60 minutes each, lasting two semesters, or the complete school year (see Table 1).

Table 1

Typical Traditional Tenth Grade Schedule

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
BAND II	BAND II	BAND II	BAND II	BAND II
ALG. II	ALG. II	ALG. II	ALG. II	ALG. II
BIOLOGY	BIOLOGY	BIOLOGY	BIOLOGY	BIOLOGY
WRLD HY	WRLD HY	WRLD HY	WRLD HY	WRLD HY
HLTH/PE	HLTH/PE	HLTH/PE	HLTH/PE	HLTH/PE
ENG. II	ENG. II	ENG. II	ENG. II	ENG. II

According to Carroll (1994), the traditional schedule produces an environment that is inefficient for instruction. The traditional schedule is inflexible and is based on administrative and institutional needs at the expense of learners (Watts & Castle, 1993).

Block Scheduling

In 1959, the first attempts to modify the traditional schedule appeared; a flexible modular schedule was created. On this schedule, classes could meet from 20 to 100 minutes (Canady & Rettig, 1995). Education was moving toward a reform within its infrastructure.

Throughout the last four decades, the traditional schedule has remained more widely accepted than the block schedule, but during the decade of the 1990s, interest in block scheduling increased (Cawelti, 1994; Canady & Rettig, 1996). The past decade, specifically, demanded and provided opportunity for educational reform.

More than 50% of secondary schools in the United States have opted to change their schools' schedule to one that involves longer classes (Canady & Rettig, 1995). Block scheduling is structured to extend the traditional periods of uninterrupted class time.

The block schedule refers to the plan in which students take four classes each semester in periods that last 85 to 100 minutes each. The basic structures of block scheduling are the principles and strategies that many educational researchers believe are necessary for increasing student improvement (Hottenstein, 1998). Reducing the number of class changes, reducing duplication and inefficiency, reducing the number of students for whom teachers must prepare, reducing the number of courses that teachers must prepare each day, reducing the number of classes and the accompanying assignments, tests, and projects, reducing the fragmentation inherent in single-period schedules, providing teachers with blocks of teaching time that allow and encourage the use of active teaching strategies, and allowing students variable amounts of time for learning without lowering standards were eight goals identified by Canady and Rettig (1995) for schools changing to the block schedule.

Classroom discussions, teamwork, and cooperative learning activities occurred more frequently in a number of classrooms utilizing the block schedule framework.

In conjunction with many school administrators' decisions to replace traditional scheduling, the popularity of block scheduling increased.

The diversity of block scheduling allows each school to select the most optimum format. Research indicates that a flexible schedule can ease the transition from school to adult life (Boyer, 1983) and provide an instructional learning environment (Nuthall & Alton-Lee, 1990).

The most widely used method of block scheduling is the 4x4 block, also known as Accelerated, which allows students the opportunity to take four subjects each semester lasting 85 to 100 minutes each.

The A/B Plan, or Alternating Day Schedule, allows students to take eight classes lasting 85 to 100 minutes each over a two-day period. The Intensive Block, or Trimester Plan, allows students to take one, two, or three subjects at a time and complete the course in 60 to 90 days.

Finally, the Modified Block allows any combination of block scheduling or traditional scheduling (Jones, 1995). For the purpose of this study, Block Scheduling refers to the 4 x 4 block, where students take four classes each semester lasting 85 to 100 minutes each (refer to Tables 2 and 3).

Table 2

Typical Tenth Grade 4 X 4 Block Schedule

SEMESTER 1	SEMESTER 2
90 class days Seven hour day 30 minute lunch 10 minutes between classes	90 class days Seven hour day 30 minute lunch 10 minutes between classes
ALGEBRA 2 One credit 90 minute class 90 class days	ENGLISH II One credit 90 minute class 90 class days
BAND One credit 90 minute class 90 class days	SPANISH 1 One credit 90 minute class 90 class days
WORLD HISTORY One credit 90 minute class 90 class days	BIOLOGY One credit 90 minute class 90 class days
HEALTH/PE One credit 90 minute class 90 class days	JOURNALISM One credit 90 minute class 90 class days

Table 3

Intended Goals of Block Scheduling

ISSUE	PROBLEMS REPORTED UNDER THE TRADITIONAL SCHEDULE	PROBLEM REMEDIES UNDER BLOCK SCHEDULE
Degree of Continuity in Instruction	Fragmentation of six to eight periods a day leave little time for bldg. connections between topics.	The number of classes are reduced, thus giving teachers time to plan.
Degree of Personalization of School Environment	Teachers may have more than 180 students in a day, making it difficult to develop a relationship that fosters learning.	Students and teachers have longer times to develop stronger relationships.
Extent of Distractions versus Orderliness	Releasing students six to eight times a day can waste learning time.	Reduction in the number of class changes for students.
Changes in Instructional Methods	In traditional schedules classes run approx. 55 minutes, making it difficult to start class, and expose students to curriculum.	Class time is extended from 85 to 100 minutes per period.
Pace of Learning	Trad. schedules don't allow for the students who may need extra time.	Increased time allows for accommodating individual student needs.

(Curry School of Education, 1997, p 12).

Attendance

During the decade of the 1990s numerous quantitative and qualitative studies have been conducted comparing block scheduling to traditional scheduling. In studies conducted on attendance, either an increase or no difference in the attendance rate has been reported. In Nevada and Oregon, an increase in attendance was reported after one year of block scheduling (West, 1996; Irmsher, 1996). In a study evaluating seven schools on block scheduling, four were reported to have increased attendance (Carroll, 1994). In Maryland, the attendance rate was found to be the same after one year of block scheduling (Guskey & Kifer, 1995). A summary of 10 separate studies on attendance and block scheduling concluded that there was no significant difference in absenteeism (Kramer, 1997).

Class Grades and Grade Point Averages

Numerous research studies have determined an increase in students' grades and grade point averages in block scheduling when compared to traditional scheduling (Buckman et al., 1995; Edwards, 1995; Eineder & Bishop, 1997; Hottenstein & Malatesta, 1993).

In a Virginia high school, 76% of the students improved their overall grade point averages under block scheduling (Edwards, 1993). In a study of California high school students, 51% raised their grade point averages under block scheduling (Shore, 1995). Comparing achievement in algebra and geometry as measured by high school subject tests, no significant difference was found comparing ability, race, or gender on the two schedules (Lockwood, 1995). Several studies supported the use of block scheduling in math and social studies (Veal & Schreiber, 1999). Students in English classes using block scheduling reported that 61% of the students noted improvements in their writing ability (Reid, 1995). In 1992, Evans High School of Orlando, Florida, converted from the traditional schedule to the block schedule. After one year on the block schedule, a random sample of 102 students was measured by comparing their grade point averages from the previous, traditional scheduled year with the grade point averages from the block scheduled year. Using mean scores to average the GPAs, no significance was found between the two schedules with 54% of the students increasing their GPAs, and 45% decreasing (Buckman, et al., 1995).

During the 1993-94 school year in Orange County, Virginia, first year block-scheduled schools were measured for student achievement. Comparing GPAs from the block-scheduled year to the previous four years using the traditional-schedule, students showed slight, non-significant increases in grades. When eleventh grade scores on the State Assessment Program were measured, the results remained unchanged (Edwards, 1995).

Philo High School in southeastern Ohio was studied to determine the effect of scheduling on student grades. In May 1996, the academic performance of eleventh and twelfth graders who had attended the school under both traditional and block schedules were studied. Using the correlated t-test to measure the overall GPAs, a significant increase of grades earned was found under the block schedule (Eineder & Bishop, 1997).

Achievement Tests

Similar to the studies comparing grade point averages, several studies have been conducted focusing primarily on achievement tests. A study conducted on gifted students taking block scheduled courses showed an increase in the number of students taking Advanced Placement Exams. The number of students earning higher scores was also determined to be significant (Edwards, 1995). A study conducted on African American students on the block schedule demonstrated a significant increase in Advanced Placement Exam scores (Guskey & Kifer, 1995).

The North Carolina Department of Public Instruction conducted a 1995 study of the comparison of end-of-course test scores for blocked and non-blocked high schools. Using Mean T-Score comparisons and .05 as the level of significance, no significant difference was found when comparing blocked to non-blocked high schools. In contrast, when the Mean T-Score comparisons were adjusted, the end-of course test scores for algebra 1; biology; economics, legal, political systems; English 1; and US history proved to be significantly higher. The adjustments took into consideration a student's time on the block schedule, the student's homework time, and the parents' level of education (North Carolina Department of Education, 1997).

In Dothan, Alabama a four-way ANOVA was used to determine the effects of scheduling on students administered the High-School Subject Test in algebra and geometry (Lockwood, 1995). The test compared scores from students registered in Algebra and Geometry during the

1993-94 traditional-scheduled school year with students registered in Algebra and Geometry, during the 1994-95 block-scheduled school year. Only experienced and tenured teachers who had taught Algebra and Geometry under both types of schedules were used. Students were further divided into low, medium, and high ability groups based on their eighth grade SAT scores to determine if the two schedule groups were affected by scholastic ability. Other research showed that the block format does not provide a significant effect on mathematics achievement and conceptual understanding (Veal & Schreiber, 1999).

A study conducted during the school year of 1994-95, by the Center for Applied Research and Educational Improvement compared two block-scheduled with two traditional-scheduled schools for the Anoka-Hennepin School District, in Minnesota. Various research methods were used, including teacher and student surveys, classroom observation, focus groups, interviews, examination of school records, and analysis of district achievement test data. Using students’ Iowa Tests of Basic Skills scores and ACT college admission test scores, quantitative results showed no significant difference between the two schedules (Haack, 1996).

In a study examining low-achieving students' Texas Assessment of Academic Skills mathematics scores, no difference was found between students on block schedule and traditional schedule (Scroth & Dixon, 1996).

African American students taking the Maryland Functional Tests showed significant improvement after one year on the block schedule, while white students showed no overall difference (Gusky & Kifer, 1995).

Student SAT and ACT test scores from a traditional schedule were compared with scores from a block schedule at a large Florida high school. No difference was found between scores (Geismer & Pullease, 1996).

School Climate

Throughout the decade of the 1980s and 1990s an increasingly large number of schools have began to switch from the traditional schedule to the block schedule (Canady & Rettig, 1995). Although improving academic success is an important issue when moving to the block schedule, the satisfaction of the school community is equally important.

In studies conducted in a Maryland high school, 95% of the faculty and 70% of the student body indicated a preference for the block schedule (Gusky & Kifer, 1995).

In a Nevada high school, 70% of the faculty and 56% of the students preferred the change (West, 1996).

Studies comparing school climates of block scheduled schools after changing over from traditional scheduled schools reported positive results from math teachers (Kramer, 1997). Students attending block scheduled schools reported that math classes were more interesting and enjoyable and the ability to take additional math classes had increased (Wronkovich, M Hess, & Robinson, 1997).

Summary

Federal government reports and research conducted during the decades of 1980s and 1990s have demonstrated that extending the time spent in each academic subject area can help influence the academic achievement of students, particularly grades and grade point averages. Although the trend during the decade of the 1990s had been a move toward block scheduling, no significant benefits of academic achievement based on standardized tests have been proven. One reason for the lack of significant studies could be the small number of quantitative tests that have been conducted. Therefore, it is important that when school board administrators consider moving to block scheduling, they consider the relationship that exists between block scheduling and academic achievement of high school students. If educational leaders are to continue to approve the change from traditional to block-scheduled curriculums, more studies comparing standardized tests must be conducted.

CHAPTER 3
METHODOLOGY

The Purpose

The purpose of this study was to determine if there was a relationship between block scheduling and the academic achievement of high school students when compared by ethnicity. Specifically, the study was designed to investigate how the independent factor of high school scheduling was associated with tenth grade FCAT scores when compared by ethnicity.

Study Design

Specifically, answers to the following questions were sought:

Is there a significant difference in the FCAT scores of students attending a block scheduling school when compared to students attending a traditional scheduling school when compared by ethnicity?

In addition, as a follow up, the following sub-questions were examined:

1. Is there a significant difference in the FCAT scores of students attending a block-scheduled school compared to students attending a traditional-scheduled school?

2. Is there a significant difference in the FCAT scores of white students attending a block-scheduled school compared to white students attending a traditional-scheduled school?

3. Is there a significant difference in the FCAT scores of black students attending a block-scheduled school compared to black students attending a traditional-scheduled school?

4. Is there a significant difference in the FCAT scores of white students compared to black students?

5. Is there a significant difference in the FCAT scores of white students attending a block-scheduled school compared to black students attending a block-scheduled school?

6. Is there a significant difference in the FCAT scores of white students attending a traditional-scheduled school compared to black students attending a traditional-scheduled school?

Selection of Subjects

The data were from four southeastern high schools during the 99-00 school year. All students enrolled in tenth grade were targeted as the population of the study. Specifically, the sample consisted of black and white tenth grade students who were in their second year at one of the test schools, had not transferred in, had not repeated a grade, and did not attend a block-scheduled middle school. Although the selected high schools have a varied population of students, the total population of Hispanic, Asian, Indian, and multicultural students represents 4.5% of the schools' population. The percentage is too small to get stable estimates for the study. The criteria for the selection of the students were given to the testing department of the school district. The data was formatted into Microsoft Excel and turned over to the researcher. The data collected were students' identification numbers, races, school numbers, and FCAT scores for reading and math. The data were then entered into the SPSS (1998) computer program, categorized into races, school numbers, scheduled type, and reading and math FCAT scores. All data used in no way compromised the identity of the students or schools. Pseudonyms are used for all high schools to assure anonymity.

High School A had a student population of 1,594 students. The total population of black students was 668 or 41.9%. The total population of white students was 757 or 47.5%. The total population of tenth grade students was 304. The total population of tenth grade black students was 116 or 38.2%. The total population of tenth grade white students was 156 or 51.3%. For this study, the total population of subjects was 228 or 78% of the tenth grade class. The total population of black subjects was 98 or 42.9%. The total population of white students was 130 or 57%. High School A students were on a six period traditional schedule.

High School B had a student population of 2,138 students. The total population of black students was 870 or

40.7%. The total population of white students was 1146 or 53.6%. The total population of tenth grade students was 475. The total population of tenth grade black students was 176 or 37.1%. The total population of tenth grade white students was 267 or 56.2%. For this study, the total population of subjects was 377 or 79.4% of the tenth grade class. The total population of tenth grade black students was 151 or 40.1%. The total population of tenth grade white students was 226 or 59.9%. High School B students were on a 4 x 4 block schedule.

High School C had a student population of 1,287 students. The total population of black students was 1183 or 91.9%. The total population of white students was 86 or 6.7%. The total population of tenth grade students was 254. The total population of tenth grade black students was 231 or 90.9%. The total population of tenth grade white students was 30 or 12%. For this study, the total population of subjects was 181 or 71.2% of the tenth grade class. The total population of black subjects was 167 or 92.3%. The total population of white students was 14 or 7.7%. High School C students were on a six-period traditional schedule.

High School D had a student population of 1766 students. The total population of black students was 1722 or 97.5%. The total population of white students was 37 or 2.1%. The total population of tenth grade students was 389. The total population of tenth grade black students is 375 or 96.4%. The total population of tenth grade white students was 12 or 3.2%. For this study, the total population of subjects was 320 or 82.3% of the tenth grade class. The total population of black subjects was 308 or 96.3%. The total population of white students was 12 or 3.8%. High School D students were on a 4 x 4 block schedule.

The total population of all four schools was 1,249 tenth grade students. The total population of black students was 798 or 22.1% (347 traditional scheduled and 451 block scheduled). The total population of white students was 451 or 36.1% (173 traditional scheduled and 278 block scheduled). For this study, the total population of subjects was 1,106 or 88.6% of the combined tenth grade classes. The total population of black subjects was 724 or 65.5% (265 or 36.6% traditional scheduled and 459 or 63.4% block scheduled). The total population of white subjects was 382 or 34.5% (144 or 37.7% traditional scheduled and 238 or 62.3% block scheduled).

The researcher compared the academic achievement (FCAT scores) of tenth grade black and white students. Specifically, the researcher sought to determine if a relationship existed between gains or losses in student achievement (FCAT scores) and the independent factor of block scheduling.

Students enrolled in the four southeastern high schools were first tested as tenth graders using the Florida Comprehensive Achievement Test (FCAT) during February of 2000. The difference between scores on the FCAT is the dependent variable in the statistical analysis.

Instruments

Standardized assessment tests are a method used by many states for determining students' academic achievement. The assessment tests are the procedure used to gather information to make knowledgeable decisions (Airasian, 1991). The purposes of the assessment tests are based on the assumption that what works in schools are those school organizations and teaching strategies that are present when standardized test scores are high and absent when such scores are low (Stiggins, R., 1995, p. 113). One type of standardized assessment test is the Florida Comprehensive Assessment Test.

The Florida Comprehensive Assessment Test (FCAT) was developed by the Assessment and Evaluation Services Section of the Florida Department of Education through a contract with a test publishing company CTB/McGraw Hill. The FCAT was designed to measure students' achievement based on the 1996 Sunshine State Standards (SSS). These standards are a guideline of what parents, businesses, community leaders, and educators felt students should know and understand at each grade level. The State Board of Education adopted the (SSS standards) for statewide use in 1996. In March of 1997 the first field test was held using more than 1,200 test questions and performance tasks. The field test was used to verify and generate questions for the FCAT. The FCAT was first given in 1998 to all students in the, fourth, fifth, eighth, and tenth grades, in Florida public schools. The purpose of the initial 1998 test was to institute a baseline for measuring impending advancement of students in achieving Florida's reading and mathematics standards (Florida Department of Education, 1998a).

The mathematics portion of the FCAT incorporated information from health/physical education, the arts, social studies, science, and foreign language into the questions. The mathematics portion was given to students at the fifth, eighth, and tenth grades. The FCAT assesses five content areas: Algebraic Thinking, Data Analysis and Probability, Geometry and Spatial Sense, Measurement, and Number Sense, Concepts, and Operations. Three types of responses were used on the questions: multiple choice and gridded-response, comprised approximately 80% of the questions, and performance tasks, made up approximately 20% of the questions. The multiple-choice allowed the students to pick from one of four possible choices. The gridded-response required the students to solve the problem and then grid in the correct numerical answer. Performance tasks required the students to develop and write their answer. Performance tasks included either short-answer questions, requiring approximately five minutes to write a response, or long-answer questions, requiring approximately 10 minutes to answer (Florida Department of Education, 1998a).

The reading portion of the FCAT was given to fourth, eighth, and tenth grade students and was grouped into two sections: Literature and Information. Tests have between six and seven reading passages with the average lengths varying from 400 words for 4th graders to 900 words for 10th graders. Two types of responses were used: multiple-choice, approximately 80%, and short and long-answer performance tasks, approximately 20% (Florida Department of Education, 1998a).

> A final way FCAT mathematics and reading tests are different from typical tests is that in both subjects the tests require students to analyze, synthesize, and evaluate the information presented, and to apply strategies or procedures they have learned. The level of thinking required of students goes beyond the recall of facts and basic comprehension typical of many standardized test questions. To emphasize the thinking required, the performance tasks are labeled "Read, Think, and Explain" in reading, and "Think, Solve, and

> Explain" in mathematics. (Florida Department of Education, 1998a, p. 4)

In January of 1998 when the FCAT was given for the first time, a total of 802,773 were scored. The scores were computed by machine and handscoring. The scoring of written responses was conducted by trained professional readers. Rubrics were established and validated by groups of Florida educators after a performance task was field-tested using over 2000 student samples. When handscoring a test, a "complete and correct response for the task is defined and then papers are identified that represent the possible scores for the task: 4, 3, 2, 1, and 0 for long-answer questions, and 2, 1, and 0 for short-answer questions." (Florida Department of Education, 1998a, p. 5) Each response was graded by two readers and a third reader was used when the first two readers were undecided. In grading the 1998 FCAT, students wrote more than 7.1 million responses and approximately 18% of the responses required a third reader. All scoring was conducted at the CTB/McGraw-Hill scoring facilities in Indianapolis, Indiana and Sacramento, California. Images of all students' responses were stored on databases and readers used computers to score the tests (Florida Department of Education, 1998a).

Once tests had been hand-scored and machine-scored, the total score was combined. The total score was compiled using a "computer-based method of analysis that combines the scores from the various types of questions." Scores are then equated to ensure that the same standard of achievement is used each year (Florida Department of Education, 1998a).

The total scores on the FCAT ranged from 100 to 500 with 300 representing an average score. Although the scoring was the same on the mathematics and reading portions, a 300 on the math did not represent the same level of achievement as a 300 on the reading portion (Florida Department of Education, 1998a).

The 1998 average for eighth grade FCAT scores statewide was 299 for mathematics and 298 for reading. The tenth grade average was 301 for mathematics and 299 for reading. On average, students in eighth and tenth grades achieved approximately 50% of the content areas of the FCAT. Although the final scores reflected a low average, they represented a true cross section of the state. Over half the students taking the FCAT had not completed course work that would have prepared them to answer all the questions (Florida Department of Education, 1998a).

Data Collection

The FCAT was administered in February of 2000. All data were collected by the North Florida County School District. The raw data were formatted into Microsoft Excel, by the testing department of the school district. The data collected were students' identification numbers, races, school numbers, and FCAT scores for reading and math. The data were then entered into the SPSS (1998) computer program, categorized into races, school numbers, scheduled type, and reading and math FCAT scores. All data used in no way compromised the identity of the students or schools.

Data Analysis

Data were analyzed using the one-way and two-way analysis of variance (ANOVA) as a statistical method for examining the data from one-way and factorial designs.

> The purpose of the ANOVA is to compare the means of two or more groups in order to decide whether the observed differences between them represent a chance occurrence or a systematic effect. The test is called a one-way Anova because it compares groups that differ on one independent variable (or factor) with two or more levels. (Shavelson, 1996, p.371)

One-way and two-way analysis of variance was used because it controls for differences that can exist in the samples that were compared. The types of scheduling were the independent variables; the tenth grade FCAT scores were the dependent variable.

Threats to Validity and Reliability

Students who were chosen for this study were unaware that their FCAT scores for the 1999-2000 school year would be used in a quantitative study. This fact eliminated test administrator bias. Students were not selected randomly. The Florida Comprehensive Assessment Test could not be guaranteed uniformed administration. The well being of each child during test taking could also not be insured.

The study was conducted within only four high schools in one county, comparing only black and white students. Therefore, results may not be generally comparable to other grade levels, areas, and races. Other studies would help to strengthen the reliability and results of the study.

CHAPTER 4
FINDINGS AND DISCUSSION

INTRODUCTION

During the decade of the 1990s the question of scheduling has been a major topic in many school districts. Research indicates that block scheduling may be as effective, if not more beneficial to the students' academic well-being than other scheduling arrangements. Although most of the research favors the block schedule, the majority of schools remain on the traditional schedule.

An alternative to the traditional schedule is the 4x4 block schedule. This schedule refers to students taking four classes daily, each semester, in blocks that typically last between 85 to 100 minutes each. The 4x4 block is the basis for this study. The comparison of the traditional schedule with the 4x4 block schedule provides the opportunity to compare the two schedules and aspects of their effects on academic achievement. This chapter reports the findings of this study.

The Purpose of the Study

The purpose of this study was to determine whether there was a relationship between 4x4 block scheduling and the academic achievement of high school students when compared by ethnicity. Specifically, the study was designed to investigate how the independent factor of high school scheduling was associated with tenth grade Florida Comprehensive Assessment Test (FCAT) scores when compared by ethnicity.

Research Questions

Answers to the following questions were sought:

Is there a significant difference in the FCAT scores of students attending a block scheduling school compared to students attending a traditional scheduling school when considering ethnicity?

To provide additional information, the following sub-questions were researched:

1. Is there a significant difference in the FCAT scores of students attending a block-scheduled school compared to students attending a traditional-scheduled school?

2. Is there a significant difference in the FCAT scores of white students attending a block-scheduled school compared to white students attending a traditional-scheduled school?

3. Is there a significant difference in the FCAT scores of black students attending a block-scheduled school compared to black students attending a traditional-scheduled school?

4. Is there a significant difference in the FCAT scores of black students compared to white students?

5. Is there a significant difference in the FCAT scores of white students attending a block-scheduled school compared to black students attending a block-scheduled school?

6. Is there a significant difference in the FCAT scores of white students attending a traditional scheduled school compared to black students attending a traditional-scheduled school?

Student Data

The data gathered for the study included achievement scores of tenth grade students enrolled in four southeastern high schools. The study was limited to black and white tenth grade students in their second consecutive year at one of the four tested high schools, who had not repeated a grade, had not transferred in, had not attended a middle school using block scheduling, and for whom both reading and math tenth grade FCAT scores were available. Black refers to a person having origins in any of the black racial groups of Africa (Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity, 1997). White refers to a person having origins in any of the original peoples of Europe, the Middle East, or North Africa (Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity, 1997). All data collected for the study remained anonymous and were provided by the school board.

Analysis of Research Questions

Research Question

Is there a significant difference in the FCAT scores of students attending a block scheduling school compared to students attending a traditional scheduling school when considering ethnicity?

Statistical Hypothesis

There was no statistically significant difference in the FCAT scores of students attending a block scheduling school compared to students attending a traditional scheduling school when considering ethnicity.

To analyze the statistical hypothesis of the study, reading and math scores from the Florida Comprehensive Assessment Test were used. The means and standard deviations are listed in Tables 4 and 5.

The means listed in Tables 4 and 5 clearly show that traditional-scheduled students had higher reading and math FCAT scores than block-scheduled students. The means also show that white students had higher reading and math FCAT scores than black students.

Table 4

Descriptive Statistics of Reading FCAT Scores for Black and White Block Students and Black and White Traditional Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
BLACK BLOCK	READING SCORES	459	269.81	48.98
BLACK TRADITIONAL	READING SCORES	265	278.59	40.80
WHITE BLOCK	READING SCORES	238	296.38	45.65
WHITE TRADITIONAL	READING SCORES	144	301.65	43.73

Table 5

Descriptive Statistics of Math FCAT Scores for Black and White Block Students and Black and White Traditional Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
BLACK BLOCK	MATH SCORES	459	272.44	51.90
BLACK TRADITIONAL	MATH SCORES	265	279.46	41.01
WHITE BLOCK	MATH SCORES	238	306.89	48.77
WHITE TRADITIONAL	MATH SCORES	144	312.03	39.25

A two-way analysis of variance was performed to test the statistical hypothesis. All two-way analysis of variance procedures for the hypothesis were executed with the SPSS computer program (SPSS, 1998). The independent variables were scheduling and ethnicity. The dependent variables were the reading and math scores from the Florida Comprehensive Assessment Test.

The two-way ANOVA for the statistical hypothesis was run at the .05 level of significance. The results of the two-way ANOVA are found in Tables 6 and 7. The data associated with the main effects for the reading and math FCAT scores indicate that there were statistically significant differences between the means of black and white students and between the means of the scheduling groups. The lack of a significant interaction indicated is no differential effect of type of scheduling in the different social groups. The null hypothesis should be rejected for ethnicity and scheduling, individually, at the .05 level. The null hypothesis could not be rejected for the interaction between ethnicity and scheduling at the .05 level.

Table 6

Two-way ANOVA for Reading FCAT Scores for Black and White Block Students and Black and White Traditional Students

SOURCE	TYPE III SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
CORRECTED MODEL	176048.557a	3	58682.852	28.046	.000
INTERCEPT	76867135.4	1	76867135.4	36736.914	.000
RACE	144067.321	1	144067.321	68.854	.000*
SCHEDULE	11549.795	1	11549.795	5.520	.019*
RACE*SCH	717.916	1	717.916	.343	.558
ERROR	2305789.28	1102	2092.368		
TOTAL	90296129.0	1106			
CORRECTED TOTAL	2481837.84	1105			

a. R Squared = .071 (Adjusted R Squared = .068)
* The mean difference is significant at the .05 level.

Table 7

Two-way ANOVA for Math FCAT Scores for Black and White Block Students and Black and White Traditional Students

SOURCE	TYPE III SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
CORRECTED MODEL	296598.703a	3	98866.234	44.259	.000
INTERCEPT	80171344.6	1	80171344.6	35889.577	.000
RACE	262678.085	1	262678.085	117.591	.000*
SCHEDULE	8644.726	1	8644.726	3.870	.049*
RACE*SCH	205.676	1	205.676	.092	.762
ERROR	2461684.68	1102	2233.834		
TOTAL	93660475.0	1106			
CORRECTED TOTAL	2758283.38	1105			

a. R Squared = .108 (Adjusted R Squared = .105)
* The mean difference is significant at the .05 level.

To further explore the statistical significance found in the research question, the following sub-questions were posed:

1. Is there a significant difference in the FCAT scores of students attending a block-scheduled school compared to students attending a traditional-scheduled school?

2. Is there a significant difference in the FCAT scores of white students attending a block-scheduled school compared to white students attending a traditional-scheduled school?

3. Is there a significant difference in the FCAT scores of black students attending a block-scheduled school compared to black students attending a traditional-scheduled school?

4. Is there a significant difference in the FCAT scores of black students compared to white students?

5. Is there a significant difference in the FCAT scores of white students attending a block-scheduled school compared to black students attending a block-scheduled school?

6. Is there a significant difference in the FCAT scores of white students attending a traditional scheduled school compared to black students attending a traditional-scheduled school?

Research Question 1

Is there a significant difference in the FCAT scores of students attending a block scheduling school compared to students attending a traditional scheduling school?

Statistical Hypothesis 1

There is no statistically significant difference in the FCAT scores of students attending a block scheduling school compared to students attending a traditional scheduling school.

To analyze the first statistical hypothesis of the study, reading and math scores from the Florida Comprehensive Assessment Test were used. The means and standard deviations are listed in Tables 8 and 9.

The means listed in Tables 8 and 9 clearly show that traditional-scheduled students had higher reading and math FCAT scores than block-scheduled students.

Table 8

Descriptive Statistics of Reading FCAT Scores for Block and Traditional Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
BLOCK	READING SCORES	697	278.88	49.47
TRADITIONAL	READING SCORES	409	286.71	43.23

Table 9

Descriptive Statistics of Math FCAT Scores for Block and Traditional Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
BLOCK	MATH SCORES	697	306.89	53.38
TRADITIONAL	MATH SCORES	409	312.03	43.25

A one-way analysis of variance was performed to test the first statistical hypothesis. The one-way analysis of variance procedures for the first hypothesis were executed with the SPSS computer program (SPSS, 1998). The independent variable was scheduling. The dependent variables were the reading and math scores from the Florida Comprehensive Assessment Test.

The one-way ANOVA for the first hypothesis was run at the .05 level of significance. The results of the one-way ANOVA for Question 1 are found in Tables 10 and 11. The data associated with the main effects indicated that there was statistically significant difference in the means at the .05 level.

Table 10

One-way ANOVA for Reading FCAT Scores for Block and Traditional Students

SOURCE	SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
BETWEEN GROUPS	15789.109	1	15789.109	7.068	.008*
WITHIN GROUPS	2466048.73	1104	2233.740		
TOTAL	2481837.84	1105			

* The mean difference is significant at the .05 level.

Table 11

One-way ANOVA for Math FCAT Scores for Block and Traditional Students

SOURCE	SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
BETWEEN GROUPS	11646.256	1	11646.256	4.681	.031*
WITHIN GROUPS	2746637.13	1104	2487.896		
TOTAL	2758283.38	1105			

* The mean difference is significant at the .05 level.

Research Question 2

Is there a significant difference in the FCAT scores of white students attending a block scheduling school compared to white students attending a traditional scheduling school?

Statistical Hypothesis 2

There is no statistically significant difference in the FCAT scores of white students attending a block scheduling school compared to white students attending a traditional scheduling school.

To analyze the second statistical hypothesis of the study, reading and math scores from the Florida Comprehensive Assessment Test were used. The means and standard deviations are listed in Tables 12 and 13.

The means listed in Tables 12 and 13 clearly show that traditional-scheduled students had higher reading and math FCAT scores than block-scheduled students.

Table 12

Descriptive Statistics of Reading FCAT Scores for White Block and White Traditional Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
WHITE BLOCK	READING SCORES	238	296.38	45.65
WHITE TRADITIONAL	READING SCORES	144	301.65	43.73

Table 13

Descriptive Statistics of Math FCAT Scores for White Block and White Traditional Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
WHITE BLOCK	MATH SCORES	238	306.89	48.77
WHITE TRADITIONAL	MATH SCORES	144	312.03	39.25

A one-way analysis of variance was performed to test the second statistical hypothesis. The one-way analysis of variance procedures for this hypothesis were executed with the SPSS computer program (SPSS, 1998). The independent variable was scheduling. The dependent variables were the reading and math scores from the Florida Comprehensive Assessment Test.

The one-way ANOVA for the second hypothesis was run at the .05 level of significance. The results of the one-way ANOVA for Question 2 are found in Tables 14 and 15. The data associated with the main effects indicate that there was no statistically significant difference in the means at the .05 level.

Table 14

One-way ANOVA for Reading FCAT Scores for White Block and White Traditional Students

SOURCE	SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
BETWEEN GROUPS	2496.086	1	2496.086	1.236	.267
WITHIN GROUPS	767420.605	380	2019.528		
TOTAL	769916.691	381			

* The mean difference is significant at the .05 level.

Table 15

One-way ANOVA for Math FCAT Scores for White Block and White Traditional Students

SOURCE	SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
BETWEEN GROUPS	2371.423	1	2371.423	1.149	.284
WITHIN GROUPS	783981.826	380	2063.110		
TOTAL	786353.249	381			

* The mean difference is significant at the .05 level.

Research Question 3

Is there a significant difference in the FCAT scores of black students attending a block scheduling school compared to black students attending a traditional scheduling school?

Statistical Hypothesis 3

There is no statistically significant difference in the FCAT scores of black students attending a block scheduling school compared to black students attending a traditional scheduling school.

To analyze the third statistical hypothesis of the study, reading and math scores from the Florida Comprehensive Assessment Test were used. The means and standard deviations are listed in Tables 16 and 17.

The means listed in Tables 16 and 17 clearly show that traditional-scheduled students had higher reading and math FCAT scores than block-scheduled students.

Table 16

Descriptive Statistics of Reading FCAT Scores for Black Block and Black Traditional Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
BLACK BLOCK	READING SCORES	459	269.81	48.98
BLACK TRADITIONAL	READING SCORES	265	278.59	40.80

Table 17

Descriptive Statistics of Math FCAT Scores for Black Block and Black Traditional Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
BLACK BLOCK	MATH SCORES	459	272.44	51.90
BLACK TRADITIONAL	MATH SCORES	265	279.46	41.01

A one-way analysis of variance was performed to test the third statistical hypothesis. The one-way analysis of variance procedures for this hypothesis were executed with the SPSS computer program (SPSS, 1998). The independent variable was scheduling. The dependent variables were the reading and math scores from the Florida Comprehensive Assessment Test.

The one-way ANOVA for the third hypothesis was run at the .05 level of significance. The results of the one-way ANOVA for Question 3 are found in Tables 18 and 19. The data associated with the main effects indicate that there was statistically significant difference in the means for reading FCAT scores. The null hypothesis should not be accepted at the .05 level. The data associated with the main effects indicated that there was no statistically significant difference in the means for math FCAT scores at the .05 level.

Table 18

One-way ANOVA for Reading FCAT Scores for Black Block and Black Traditional Students

SOURCE	SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
BETWEEN GROUPS	12945.925	1	12945.925	6.076	.014*
WITHIN GROUPS	1538368.68	722	2130.705		
TOTAL	1551314.60	723			

* The mean difference is significant at the .05 level.

Table 19

One-way ANOVA for Math FCAT Scores for Black Block and Black Traditional Students

SOURCE	SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
BETWEEN GROUPS	8271.097	1	8271.097	3.559	.060
WITHIN GROUPS	1677702.85	722	2323.688		
TOTAL	1685973.95	723			

* The mean difference is significant at the .05 level.

Research Question 4

Is there a significant difference in the FCAT scores of white students compared to black students?

Statistical Hypothesis 4

There is no statistically significant difference in the FCAT scores of white students compared to black students.

To analyze the fourth statistical hypothesis of the study, reading and math scores from the Florida Comprehensive Assessment Test were used. The means and standard deviations are listed in Table 20 and 21.

The means listed in Tables 20 and 21 clearly show that white students had higher reading and math FCAT scores than black students.

Table 20

Descriptive Statistics of Reading FCAT Scores for Black and White Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
BLACK	READING SCORES	724	273.02	46.32
WHITE	READING SCORES	382	298.37	44.95

Table 21

Descriptive Statistics of Math FCAT Scores for Black and White Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
BLACK	MATH SCORES	724	275.01	48.29
WHITE	MATH SCORES	382	308.82	45.43

A one-way analysis of variance was performed to test the fourth statistical hypothesis. The one-way analysis of variance procedures for this hypothesis were executed with the SPSS computer program (SPSS, 1998). The independent variable was ethnicity. The dependent variables were the reading and math scores from the Florida Comprehensive Assessment Test.

The one-way ANOVA for the fourth hypothesis was run at the .05 level of significance. The results of the one-way ANOVA for Question 4 are found in Tables 22 and 23. The data associated with the main effects indicate that there was statistically significant difference in the means at the .05 level.

Table 22

One-way ANOVA for Reading FCAT Scores for Black and White Students

SOURCE	SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
BETWEEN GROUPS	160606.546	1	160606.546	76.386	.000*
WITHIN GROUPS	2321231.29	1104	2102.565		
TOTAL	2481837.84	1105			

* The mean difference is significant at the .05 level.

Table 23

One-way ANOVA for Math FCAT Scores for Black and White Students

SOURCE	SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
BETWEEN GROUPS	285956.183	1	285956.183	127.692	.000*
WITHIN GROUPS	2472327.20	1104	2239.427		
TOTAL	2758283.38	1105			

*The mean difference is significant at the .05 level.

Research Question 5

Is there a significant difference in the FCAT scores of white students attending a block scheduling school compared to black students attending a block scheduling school?

Statistical Hypothesis 5

There is no statistically significant difference in the FCAT scores of white students attending a block scheduling school compared to black students attending a block scheduling school.

To analyze the fifth statistical hypothesis of the study, reading and math scores from the Florida Comprehensive Assessment Test were used. The means and standard deviations are listed in Table 24 and 25.

The means listed in Tables 24 and 25 clearly show that white block-scheduled students had higher reading and math FCAT scores than black block-scheduled students.

Table 24

Descriptive Statistics of Reading FCAT Scores for White Block and Black Block Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
WHITE BLOCK	READING SCORES	238	296.38	45.65
BLACK BLOCK	READING SCORES	459	269.81	48.98

Table 25

Descriptive Statistics of Math FCAT Scores for White Block and Black Block Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
WHITE BLOCK	MATH SCORES	238	306.89	48.77
BLACK BLOCK	MATH SCORES	459	272.44	51.90

A one-way analysis of variance was performed to test the fifth statistical hypothesis. The one-way analysis of variance procedures for this hypothesis were executed with the SPSS computer program (SPSS, 1998). The independent variable was ethnicity. The dependent variables were the reading and math scores from the Florida Comprehensive Assessment Test.

The one-way ANOVA for the fifth hypothesis was run at the .05 level of significance. The results of the one-way ANOVA for Question 5 are found in Tables 26 and 27. The data associated with the main effects indicate that there was statistically significant difference in the means at the .05 level.

Table 26

One-way ANOVA for Reading Scores for White Block and Black Block Students

SOURCE	SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
BETWEEN GROUPS	110627.877	1	110627.877	48.270	.000*
WITHIN GROUPS	1592842.48	695	2291.860		
TOTAL	1703470.35	696			

* The mean difference is significant at the .05 level.

Table 27

One-way ANOVA for Math Scores for White Block and Black Block Students

SOURCE	SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
BETWEEN GROUPS	185971.437	1	185971.437	71.909	.000*
WITHIN GROUPS	1797405.04	695	2586.194		
TOTAL	1983376.48	696			

* The mean difference is significant at the .05 level.

Research Question 6

Is there a significant difference in the FCAT scores of white students attending a traditional scheduling school compared to black students attending a traditional scheduling school?

Statistical Hypothesis 6

There is no statistically significant difference in the FCAT scores of white students attending a traditional scheduling school compared to black students attending a traditional scheduling school.

To analyze the sixth statistical hypothesis of the study, reading and math scores from the Florida Comprehensive Assessment Test were used. The means and standard deviations are listed in Tables 28 and 29.

The means listed in Tables 28 and 29 clearly show that white traditional-scheduled students had higher reading and math FCAT scores than black traditional-scheduled students.

Table 28

Descriptive Statistics of Reading FCAT Scores for White Traditional and Black Traditional Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
WHITE TRADITIONAL	READING SCORES	144	301.65	43.73
BLACK TRADITIONAL	READING SCORES	265	278.59	40.80

Table 29

Descriptive Statistics of Math FCAT Scores for White Traditional and Black Traditional Students

GROUP	VARIABLE	N	MEAN	STANDARD DEVIATION
WHITE TRADITIONAL	MATH SCORES	144	312.03	39.25
BLACK TRADITIONAL	MATH SCORES	265	279.46	41.01

A one-way analysis of variance was performed to test the sixth statistical hypothesis. The one-way analysis of variance procedures for this hypothesis were executed with the SPSS computer program (SPSS, 1998). The independent variable was ethnicity. The dependent variables were the reading and math scores from the Florida Comprehensive Assessment Test.

The one-way ANOVA for the sixth hypothesis was run at the .05 level of significance. The results of the one-way ANOVA for Question 6 are found in Tables 30 and 31. The data associated with the main effects indicate that there was statistically significant difference in the means at the .05 level.

Table 30

One-way ANOVA for Reading FCAT Scores for White Traditional and Black Traditional Students

SOURCE	SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
BETWEEN GROUPS	49631.572	1	49631.572	28.333	.000*
WITHIN GROUPS	712946.805	407	1751.712		
TOTAL	762578.377	408			

* The mean difference is significant at the .05 level.

Table 31

One-way ANOVA for Math FCAT Scores for White Traditional and Black Traditional Students

SOURCE	SUM OF SQUARES	df	MEAN SQUARES	F	SIG.
BETWEEN GROUPS	98981.011	1	98981.011	60.645	.000*
WITHIN GROUPS	664279.640	407	1632.137		
TOTAL	763260.650	408			

* The mean difference is significant at the .05 level.

Summary of the Analyses

Analysis of the data showed that when all reading and math FCAT scores were compared, scheduling and ethnicity did have a statistically significant effect at the .05 level. Normally, white students had higher mean scores than black students, and traditionally-scheduled students had higher mean scores than block-scheduled students. There was, however, no significant interaction effect on reading and math FCAT scores due to scheduling by ethnicity. The lack of significant interaction means there is no differential effect. Follow-up exploratory analyses revealed that when the FCAT scores of black students in a block-schedule were compared to black students in a traditional-schedule, there was a statistical significant difference at the .05 level. The black traditional-scheduled students reading FCAT scores also were significantly higher than the black block-scheduled students reading FCAT scores. The same pattern in observed means was observed for white students, but probably due to the smaller sample size, this difference did not attain significance.

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter begins with a summary of the study. The summary contains the research questions and methodology followed in the study. The second section contains a summary of the findings. The third section includes a discussion of the conclusions. The fourth section includes a discussion of the limitations. The fifth section concludes the chapter with recommendations for future research.

Summary of the Study

In the decades of the 1980s and 1990s an increasing number of schools and school districts have chosen to implement block scheduling. In order for school and district administrators to make educated choices, scientific research on scheduling must be available. This dissertation was designed to add to the collection of empirical data on scheduling. The purpose of this study was to determine whether there was a relationship between block scheduling and the academic achievement of high school students when compared by ethnicity. Specifically, the study was designed to investigate how the independent factor of high school scheduling was associated with tenth grade FCAT scores when compared by ethnicity. The data were from reading and math FCAT scores for 2000-2001 school year. The scores of black and white tenth grade students from four southeastern high schools, two traditional and two block scheduling, were compared for significance using a two-way ANOVA and a one-way ANOVA. The comparisons were made on scheduling type and ethnicity.

The main research question asked if there was a significant difference in the FCAT scores of students attending a block scheduling school compared to students attending a traditional scheduling school when considering ethnicity.

To help answer this question, six sub-questions were researched:

1. Is there a significant difference in the FCAT scores of students attending a block-scheduled school compared to students attending a traditional-scheduled school?

2. Is there a significant difference in the FCAT scores of white students attending a block-scheduled school compared to white students attending a traditional-scheduled school?

3. Is there a significant difference in the FCAT scores of black students attending a block-scheduled school compared to black students attending a traditional-scheduled school?

4. Is there a significant difference in the FCAT scores of black students compared to white students?

5. Is there a significant difference in the FCAT scores of white students attending a block-scheduled school compared to black students attending a block-scheduled school?

6. Is there a significant difference in the FCAT scores of white students attending a traditional scheduled school compared to black students attending a traditional-scheduled school?

Summary of the Findings

Two two-way ANOVA's and six one-way ANOVA's were performed to answer the research questions. The dependent variables were the reading and math FCAT scores. The independent variables were schedule types and ethnicity.

The main research question asked if there was a significant difference in the FCAT scores of students attending a block scheduling school compared to students attending a traditional scheduling school when considering ethnicity. To answer the question, two two-way ANOVA's were run. The dependent variable in the first test was the reading FCAT scores and the dependent variable in the second test was the math FCAT scores. The independent variables were schedule types and ethnicity in both tests. The data associated with the main effects for the reading and math FCAT scores indicate that there was a statistically significant difference in the means between ethnicity and scheduling. The lack of a significant interaction means there is no differential effect. The statistical hypothesis of no difference was rejected for ethnicity and scheduling, individually, at the .05 level. The statistical hypothesis of no difference was accepted for the interaction between ethnicity and scheduling at the .05 level.

The main research question was written as six null hypotheses for the purpose of additional testing:

HO1: There is no difference in the FCAT scores of students attending a block-scheduled school compared to students attending a traditional-scheduled school.

HO2: There is no difference in the FCAT scores of white students attending a block-scheduled school compared to white students attending a traditional-scheduled school.

HO3: There is no difference in the FCAT scores of black students attending a block-scheduled school compared to black students attending a traditional-scheduled school.

HO4: There is no difference in the FCAT scores of black students w compared to white students.

HO5: There is no difference in the FCAT scores of white students attending a block-scheduled school compared to black students attending a block-scheduled school.

HO6: There is no difference in the FCAT scores of white students attending a traditional-scheduled school compared to black students attending a traditional-scheduled school.

To answer the first question, a one-way analysis of variance was performed to test the first statistical hypothesis. The one-way analysis of variance procedures for the first hypothesis were executed with the SPSS computer program. The independent variable was scheduling. The dependent variables were the reading and math scores from the Florida Comprehensive Assessment Test.

The one-way ANOVA for the first hypothesis was run at the .05 level of significance. The data associated with the main effects indicated that there was a statistically significant difference in the means. The null hypothesis was rejected at the .05 level.

To answer the second question, a one-way analysis of variance was performed to test the second statistical hypothesis. The one-way analysis of variance procedures for this hypothesis were executed with the SPSS computer program. The independent variable was scheduling. The dependent variables were the reading and math scores from the Florida Comprehensive Assessment Test.

The one-way ANOVA for the second hypothesis was run at the .05 level of significance. The data associated with the main effects indicate that there was no statistically significant difference in the means. The null hypothesis could not be rejected at the .05 level for the white-only sample.

To answer the third question, a one-way analysis of variance was performed to test the third statistical hypothesis. The one-way analysis of variance procedures for this hypothesis were executed with the SPSS computer program.

The independent variable was scheduling. The dependent variables were the reading and math scores from the Florida Comprehensive Assessment Test.

The one-way ANOVA for the third hypothesis was run at the .05 level of significance. The data associated with the main effects indicated that there was a statistically significant difference in the means for reading FCAT scores. The null hypothesis was rejected at the .05 level. The data associated with the main effects indicate that there was no statistically significant difference in the means for math FCAT scores. The null hypothesis failed to be rejected at the .05 level for the black-only sample.

To answer the fourth question, a one-way analysis of variance was performed to test the fourth statistical hypothesis. The one-way analysis of variance procedures for this hypothesis were executed with the SPSS computer program. The independent variable was ethnicity. The dependent variables were the reading and math scores from the Florida Comprehensive Assessment Test.

The one-way ANOVA for the fourth hypothesis was run at the .05 level of significance. The data associated with the main effects indicated that there was a statistically significant difference in the means. The null hypothesis was rejected at the .05 level.

To answer the fifth question, a one-way analysis of variance was performed to test the fifth statistical hypothesis. The one-way analysis of variance procedures for this hypothesis were executed with the SPSS computer program. The independent variable was ethnicity. The dependent variables were the reading and math scores from the Florida Comprehensive Assessment Test.

The one-way ANOVA for the fifth hypothesis was run at the .05 level of significance. The data associated with the main effects indicate that there was a statistically significant difference in the means. The null hypothesis was rejected at the .05 level.

To answer the sixth question, a one-way analysis of variance was performed to test the sixth statistical hypothesis. The one-way analysis of variance procedures for this hypothesis were executed with the SPSS computer program. The independent variable was ethnicity. The dependent variables were the reading and math scores from the Florida Comprehensive Assessment Test.

The one-way ANOVA for the sixth hypothesis was run at the .05 level of significance. The data associated with the main effects indicated that there was a statistically significant difference in the means. The null hypothesis was rejected at the .05 level.

Conclusions

Based on the results of this study, it can be concluded that scheduling and ethnicity were significantly related to achievement as measured by the FCAT reading and math scores. Traditional-scheduled students had higher reading and math FCAT scores than block-scheduled students. White students had higher reading and math FCAT scores than black students. Black traditional-scheduled students had statistically significant higher reading FCAT scores than black block-scheduled students. These conclusions can be drawn based on interpretation of the following facts.

1. The means scores, performed in conjunction with the main hypothesis, showed traditional-scheduled students had higher reading and math FCAT scores than block-scheduled students. The means also showed that white students had higher reading and math FCAT scores than black students. The results of the two-way ANOVA, performed in conjunction with the main hypothesis, showed ethnicity and scheduling to be statistically significant at the .05 level.

2. The mean scores, performed in conjunction with the first follow-up statistical hypothesis, showed traditional-scheduled students had higher reading and math FCAT scores than block-scheduled students. The results of the one-way ANOVA, performed in conjunction with the first statistical

hypothesis, showed the difference in means between traditional-scheduled students' reading and math FCAT scores and block-scheduled students' scores were statistically significant at the .05 level.

3. The mean scores, performed in conjunction with the second follow-up statistical hypothesis, showed white traditional-scheduled students had higher reading and math FCAT scores than white block-scheduled students. The results of the one-way ANOVA, performed in conjunction with the second statistical hypothesis, showed white traditional-scheduled students mean reading and math FCAT scores were higher, but the difference in means was not statistically significant at the .05 level. The reason the scores were not significantly higher for white traditional-scheduled students, may be due to a loss of power in relation to the low number of white students in the study.

4. The mean scores, performed in conjunction with the third follow-up statistical hypothesis, showed black traditional-scheduled students had higher mean reading and math FCAT scores than black block-scheduled students. The results of the one-way ANOVA, performed in conjunction with the third statistical hypothesis, showed black traditional-scheduled students reading FCAT scores were statistically significant at the .05 level. The mean math FCAT scores of

black traditional-scheduled students were higher than mean FCAT scores of black block-scheduled students, but the mean score difference was statistically significant at the .06 level, not at the .05 level.

5. The mean scores, performed in conjunction with the fourth follow-up statistical hypothesis, showed white students had higher reading and math FCAT scores than black students. The results of the one-way ANOVA, performed in conjunction with the fourth statistical hypothesis, showed the mean differences between white students' and black students' reading and math FCAT scores were statistically significant at the .05 level. This result supports research literature that indicates white students score statistically higher than black students on assessment tests (Jencks & Phillips, 1998).

6. The mean scores, performed in conjunction with the fifth follow-up statistical hypothesis, showed white block-scheduled students had higher reading and math FCAT scores than black block-scheduled students. The results of the one-way ANOVA, performed in conjunction with the fifth statistical hypothesis, showed the differences between black and white block-scheduled students' mean reading and math FCAT scores were statistically significant at the .05 level. This result supports research literature that indicates white

students score on average higher than black students on assessment tests (Jencks & Phillips, 1998).

7. The mean scores, performed in conjunction with the sixth follow-up statistical hypothesis, showed white traditional-scheduled students had higher mean reading and math FCAT scores than black traditional-scheduled students. The results of the one-way ANOVA, performed in conjunction with the sixth statistical hypothesis, showed that mean differences between block and white traditional-scheduled students' reading and math FCAT scores were statistically significant at the .05 level. This result supports research literature that indicates white students score on average higher than black students on assessment tests (Jencks & Phillips, 1998).

It can be concluded from the strength of these findings that the effects of scheduling and ethnicity were statistically significant at the .05 level. The means of traditional-scheduled students reading and math FCAT scores were higher than the means of block-scheduled students reading and math FCAT scores. The means of white students reading and math FCAT scores were higher than the means of black students reading and math FCAT scores. When considering the interaction between scheduling and ethnicity, there was no overall significant differential effect of scheduling on the performance of black and white students.

Implications

This study was conducted at the end of the second year of the implementation of the block-schedule in a northeast Florida school district. It is important to recognize that, the groups where not randomly assigned and the number of subjects were not equivalent, which may have effected the results. Although, the study was able to provide the school district with empirical data, and add to the national data on scheduling, the researcher recommends additional research. A broader study of additional schools, and a greater number of students, would increase the power of the study.

1. To expand the body of literature that concerns block-scheduling when considering ethnicity, similar studies need to be conducted for longer periods of time and include additional grade levels and populations.

2. Future studies need to investigate from a qualitative approach. Qualitative research could help to identify and explain differences between traditional-scheduled and block-scheduled assessment test scores, and white and black assessment test scores.

3. For educators who are considering or have adopted

a block-scheduled curriculum, steps could be taken to reduce the gap between traditional-scheduled and block-scheduled students. Training for teachers and administrators working at block-scheduled schools could be conducted to train instructors in interdisciplinary and cooperative learning techniques. Students could be required to take reading and math classes in both semesters to help ensure continuous test preparation throughout the year. This may help if the assessment tests were given in a semester that the students were not taking a reading or math class.

Although block-scheduling may not produce superior outcomes in achievement, there may be other reasons to prefer block-scheduling. Research has shown that under the block-scheduled curriculum, students' grade point averages have increased, disciplinary problems have decreased, students' attendance have increased, and an overall attitude concerning the school climate has increased (Buckman et al., 1995; Eineder & Bishop, 1997; Gusky & Kifer, 1995; Hottenstein & Malatesta, 1993; Irmsher, 1996; West, 1996). To date, we do not know which scheduling is better because research has not been clearly able to identify either scheduling as superior to the other. Additional studies on scheduling will help to define the needs of scheduling in an ethnically diverse classroom.

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APPENDIX
RAW DATA

RACE	SCH.	READ	MATH	SCHED
B	165	296	338	b
W	241	304	330	t
B	165	296	303	b
B	248	243	286	b
B	248	326	334	b
B	96	286	278	t
B	165	285	299	b
B	165	212	264	b
B	165	212	237	b
B	165	236	258	b
B	248	263	261	b
W	241	263	291	t
B	165	301	232	b
B	248	321	299	b
B	241	156	100	t
B	96	254	276	t
B	96	258	273	t
W	241	302	331	t
B	248	274	301	b
B	248	252	276	b
B	248	220	249	b
B	96	305	252	t
W	248	242	310	b
B	96	251	294	t
B	248	244	211	b
B	165	219	195	b
B	241	261	270	t
B	248	285	294	b
B	248	187	216	b
B	248	288	324	b
B	165	278	269	b
B	165	243	311	b
B	165	182	267	b
W	248	318	316	b
B	241	260	278	t
W	241	281	341	t
B	96	235	281	t
W	241	242	269	t
W	248	162	195	b
B	241	213	253	t
W	248	335	339	b
B	165	224	260	b
B	96	295	279	t
B	96	272	278	t
B	248	271	266	b
B	248	295	283	b
B	96	301	279	t
B	241	269	273	t
B	96	279	243	t
B	165	274	301	b
B	165	206	180	b
B	241	290	272	t
B	165	306	274	b
W	241	319	306	t
W	241	261	281	t
B	165	286	295	b
B	165	296	294	b
B	96	238	260	t
B	165	152	100	b
B	165	297	278	b
B	241	254	235	t
B	165	190	214	b
B	165	277	275	b
B	248	265	291	b
B	165	190	163	b
B	248	298	301	b

B	241	322	298	t
B	165	282	300	b
B	165	100	176	b
B	241	290	266	t
B	248	252	242	b
B	241	288	249	t
W	241	292	321	t
W	241	273	285	t
B	165	263	248	b
B	165	196	249	b
W	241	221	302	t
B	248	170	182	b
B	248	256	336	b
B	248	276	284	b
B	248	252	231	b
B	165	183	246	b
W	248	210	234	b
B	165	189	182	b
B	248	127	214	b
B	241	273	293	t
B	96	225	231	t
B	248	326	296	b
B	96	260	219	t
B	165	234	161	b
B	96	217	252	t
B	248	143	106	b
W	96	327	285	t
W	248	208	263	b
W	248	216	289	b
W	248	277	266	b
B	241	333	315	t
B	96	261	284	t
B	248	207	201	b
B	248	253	253	b
B	248	234	236	b
B	96	264	197	t
B	241	186	191	t
B	165	172	254	b
B	165	158	100	b
B	165	257	214	b
B	165	174	220	b
B	248	312	315	b
B	96	294	286	t
B	96	254	268	t
B	165	277	293	b
B	165	110	239	b
B	96	278	229	t
B	165	265	246	b
W	248	261	327	b
B	165	259	248	b
W	96	318	324	t
W	248	286	306	b
B	165	177	188	b
W	96	286	311	t
B	96	301	296	t
W	248	332	336	b
B	165	284	282	b
B	96	266	254	t
B	241	216	185	t
B	96	265	281	t
B	165	252	262	b
B	165	223	220	b
B	165	221	246	b
B	165	279	273	b
B	248	270	261	b
W	248	308	288	b
B	165	145	227	b
B	248	259	288	b
B	241	202	286	t
B	165	253	244	b
W	248	357	329	b
B	165	151	176	b
B	241	182	250	t
W	248	316	333	b
W	241	286	265	t
B	248	315	258	b
B	96	272	245	t
B	165	255	305	b
B	165	121	269	b
B	165	343	351	b
B	165	320	308	b
B	96	256	282	t
B	165	319	330	b
B	165	290	289	b
B	165	244	254	b
B	165	266	322	b
B	96	340	327	t
B	165	215	233	b
B	165	205	107	b
W	241	320	312	t
W	248	335	345	b
B	248	268	245	b
B	165	200	234	b
B	96	300	296	t
B	248	275	186	b
W	248	263	292	b

B	248	260	256	b
B	96	100	100	t
B	165	278	230	b
B	165	154	100	b
W	248	276	312	b
W	248	217	306	b
B	96	249	187	t
B	165	252	255	b
B	165	241	253	b
B	165	289	268	b
B	165	293	291	b
B	241	301	294	t
B	165	215	100	b
B	165	234	218	b
B	165	268	274	b
W	241	130	237	t
W	248	321	301	b
W	248	315	310	b
B	241	260	274	t
B	165	325	303	b
W	165	125	199	b
B	165	247	303	b
B	165	267	238	b
B	248	192	191	b
B	165	100	100	b
W	248	334	284	b
W	248	273	288	b
W	248	349	310	b
B	248	285	291	b
B	165	189	205	b
W	248	289	299	b
W	248	278	309	b
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W	248	308	295	b
W	248	254	310	b
W	248	184	100	b
B	165	256	293	b
B	241	323	291	t
W	96	314	320	t
W	241	305	263	t
B	248	275	283	b
B	165	251	190	b
B	165	274	286	b
B	165	235	247	b
B	96	291	285	t
B	96	243	252	t
B	248	283	258	b
B	165	324	278	b
B	96	211	204	t
B	165	241	245	b
B	96	300	308	t
W	248	294	262	b
B	165	228	291	b
W	248	251	210	b
B	165	256	247	b
B	165	262	277	b
B	165	276	255	b
B	165	285	318	b
B	248	328	318	b
B	248	282	275	b
B	165	212	225	b
B	165	288	315	b
B	165	314	313	b
B	96	259	247	t
B	96	294	306	t
B	165	379	342	b
B	165	321	332	b
B	165	274	284	b
B	165	319	284	b
W	165	259	258	b
B	241	297	296	t
B	165	210	260	b
B	165	259	287	b
W	248	340	308	b
W	248	310	353	b
W	241	315	305	t
W	248	280	332	b
W	248	302	312	b
W	248	292	246	b
B	248	331	309	b
B	165	288	300	b
B	248	285	312	b
B	165	299	299	b
B	248	263	245	b
B	165	100	167	b
B	165	278	270	b
W	241	322	301	t
W	241	239	324	t
B	241	261	258	t
W	241	274	265	t
W	248	230	247	b
W	248	292	293	b
B	165	295	266	b
B	165	315	264	b
B	165	208	215	b
B	96	277	311	t

B	96	296	288	t
B	165	281	299	b
B	248	283	160	b
B	96	225	236	t
B	165	304	278	b
B	165	283	281	b
W	165	260	304	b
W	248	177	197	b
B	248	290	316	b
B	241	313	286	t
B	165	234	252	b
B	248	312	275	b
B	241	276	262	t
B	248	297	265	b
B	241	330	356	t
B	241	268	252	t
B	248	299	310	b
B	248	328	276	b
B	165	264	230	b
B	241	304	308	t
B	248	291	284	b
W	248	191	236	b
W	248	235	258	b
W	248	303	253	b
W	248	219	100	b
W	248	179	100	b
B	165	229	243	b
B	96	289	239	t
B	96	272	304	t
B	96	223	240	t
B	96	319	304	t
B	96	296	264	t
B	165	296	281	b
B	165	230	235	b
B	165	280	254	b
B	165	273	239	b
B	165	242	252	b
B	165	269	242	b
B	165	260	263	b
B	165	238	231	b
B	96	287	249	t
B	165	234	246	b
B	96	242	259	t
B	248	308	275	b
W	165	100	196	b
B	96	324	301	t
W	241	323	340	t
W	241	256	300	t
W	248	300	303	b
W	248	246	255	b
W	248	250	231	b
W	248	267	301	b
B	248	296	276	b
B	248	332	289	b
B	248	214	198	b
B	165	249	264	b
W	248	271	214	b
B	96	301	291	t
B	165	175	108	b
B	165	269	272	b
W	241	287	294	t
B	165	290	286	b
B	96	260	234	t
W	165	291	262	b
B	96	251	274	t
B	96	286	273	t
B	241	226	158	t
B	96	278	297	t
B	165	267	275	b
B	241	239	237	t
B	165	165	100	b
B	241	308	269	t
B	241	269	282	t
B	165	281	319	b
B	96	311	314	t
B	96	259	230	t
B	165	178	169	b
B	248	289	275	b
B	248	322	257	b
B	165	343	31	b
B	165	272	259	b
B	165	315	328	b
B	241	291	301	t
B	241	286	240	t
B	165	173	100	b
B	96	359	323	t
B	96	201	213	t
B	248	307	319	b
B	165	258	202	b
B	165	276	269	b
B	96	220	275	t
B	165	267	276	b
B	165	257	256	b
W	248	268	307	b
B	165	324	324	b
B	248	371	341	b
B	96	306	301	t
B	165	260	250	b

B	248	131	225	b
B	165	203	219	b
B	165	404	330	b
B	165	287	276	b
W	248	305	342	b
B	165	354	339	b
B	165	184	158	b
B	248	300	279	b
B	165	307	315	b
B	248	240	308	b
B	165	267	257	b
B	96	302	291	t
B	96	327	302	t
B	96	317	302	t
B	248	283	276	b
B	165	320	322	b
B	165	313	324	b
B	96	316	316	t
W	248	328	349	b
B	165	267	282	b
B	96	261	237	t
B	248	296	321	b
W	248	254	298	b
W	241	336	334	t
B	248	288	253	b
B	241	364	344	t
W	248	334	368	b
B	248	275	313	b
W	248	333	399	b
W	248	371	331	b
W	241	300	322	t
B	241	277	282	t
W	241	316	308	t
W	248	241	219	b
W	248	340	360	b
B	165	274	307	b
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B	248	291	322	b
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B	165	273	297	b
B	165	221	282	b
B	96	316	300	t
B	241	306	307	t
B	248	233	270	b
B	165	321	324	b
W	248	301	307	b
B	241	310	306	t
B	96	305	296	t
B	241	266	263	t
B	96	256	302	t
W	248	324	320	b
W	248	344	314	b
W	96	332	343	t
W	248	363	351	b
W	248	310	300	b
B	165	161	192	b
B	165	289	296	b
B	96	246	241	t
B	248	214	266	b
B	248	283	287	b
B	96	269	317	t
W	241	344	353	t
B	96	212	280	t
B	96	343	259	t
W	241	227	203	t
B	165	126	269	b
W	241	288	354	t
W	248	258	270	b
W	96	227	313	t
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W	248	279	309	b
W	248	310	332	b
W	241	323	317	t
B	241	309	302	t
B	248	218	244	b
W	241	277	325	t
B	248	210	100	b
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W	241	302	320	t
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B	241	336	349	t
B	165	331	298	b
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W	248	282	304	b
W	241	167	237	t
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W	248	338	332	b
W	248	319	332	b
B	96	258	252	t
B	96	314	311	t

W	248	309	316	b
W	248	208	231	b
W	248	322	359	b
B	96	261	266	t
W	248	342	335	b
W	248	361	346	b
W	241	358	337	t
W	248	346	339	b
W	241	283	330	t
W	241	354	366	t
B	96	269	229	t
B	96	211	263	t
W	248	292	291	b
W	241	310	300	t
B	96	323	339	t
B	248	317	305	b
W	241	345	367	t
W	241	334	355	t
W	248	324	329	b
W	241	284	334	t
W	241	308	360	t
W	96	315	333	t
W	241	333	320	t
W	241	322	312	t
W	241	267	289	t
B	241	359	333	t
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W	248	294	280	b
W	248	328	318	b
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B	165	205	218	b
W	241	280	289	t
B	96	294	318	t
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B	248	306	268	b
W	248	295	263	b
B	248	322	309	b
B	248	352	319	b
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B	248	308	279	b
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W	241	338	324	t
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B	241	288	277	t
B	96	283	265	t
B	241	300	325	t
W	241	268	303	t
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W	96	316	368	t
W	248	330	377	b
B	165	329	372	b
W	248	274	309	b
B	96	272	290	t
W	248	260	292	b
W	241	344	365	t
W	241	315	317	t
W	241	264	241	t
W	241	312	321	t
B	248	293	315	b
W	248	328	371	b
W	241	340	329	t
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B	241	269	240	t
W	241	318	248	t
B	165	231	296	b
W	248	318	338	b
B	241	332	302	t
B	248	336	327	b
W	248	310	330	b
W	248	338	382	b
W	248	327	353	b
W	241	315	355	t
W	248	326	373	b
W	248	354	338	b
W	248	357	298	b
B	96	268	297	t
W	241	366	381	t
B	248	289	284	b
W	248	259	186	b
W	248	352	328	b
W	248	335	332	b
W	241	274	290	t
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W	248	309	338	b
W	248	350	350	b
W	248	312	298	b
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W	248	282	285	b
W	248	281	327	b
W	248	285	323	b
B	248	292	294	b

W	241	354	319	t
W	248	312	351	b
B	248	257	294	b
B	248	287	312	b
B	248	271	293	b
W	241	311	315	t
W	241	298	307	t
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W	248	287	278	b
B	248	271	272	b
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B	241	303	319	t
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W	248	299	341	b
W	241	261	284	t
W	248	336	347	b
B	241	308	333	t
W	241	319	311	t
W	248	295	297	b
B	96	168	267	t
W	248	294	335	b
W	241	284	323	t
W	241	347	330	t
B	248	252	278	b
W	241	314	319	t
B	96	248	270	t
B	165	239	280	b
B	248	261	281	b
B	165	312	298	b
B	241	188	206	t
B	165	299	306	b
B	248	256	258	b
B	165	327	341	b
B	165	273	295	b
W	248	319	329	b
B	248	292	310	b
B	96	315	319	t
W	248	253	298	b
W	248	273	266	b
W	248	312	326	b
B	165	240	257	b
W	241	279	318	t
B	96	220	269	t
W	248	348	352	b
W	248	348	316	b
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B	96	264	241	t
B	165	214	243	b
W	248	320	328	b
B	96	273	271	t
B	96	284	321	t
B	96	283	295	t
B	241	257	296	t
W	248	313	296	b
W	248	308	338	b
W	248	287	325	b
W	248	313	331	b
B	248	264	264	b
B	241	144	163	t
W	241	359	344	t
B	96	241	254	t
B	248	310	288	b
W	248	322	341	b
B	165	246	250	b
W	165	279	302	b
W	241	317	292	t
W	241	283	307	t
W	241	286	294	t
B	165	218	191	b
B	96	303	334	t
B	96	247	299	t
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B	96	288	305	t
B	248	149	276	b
B	165	322	318	b
W	248	315	312	b
B	96	303	316	t
W	241	339	332	t
B	165	268	320	b
B	165	308	302	b
B	165	324	319	b
B	165	286	292	b
B	165	274	321	b
B	165	239	100	b
B	165	301	327	b
B	165	180	252	b
B	248	270	277	b
B	165	291	291	b
W	248	297	266	b
B	165	241	293	b
B	165	308	296	b
B	96	252	265	t
B	248	293	289	b
W	248	328	335	b
W	241	297	283	t
W	248	290	290	b
W	248	363	328	b

W	248	188	307	b
B	96	315	299	t
W	248	310	338	b
W	248	355	283	b
W	248	329	357	b
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B	96	282	305	t
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B	165	341	303	b
B	241	100	259	t
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W	241	310	240	t
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W	248	292	331	b
W	248	319	305	b
B	165	295	319	b
B	241	275	210	t
B	248	306	351	b
W	248	346	335	b
W	248	313	343	b
B	248	295	283	b
W	248	364	357	b
W	248	300	305	b
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B	248	312	324	b
B	165	294	293	b
B	248	339	319	b
B	248	259	299	b
B	241	295	300	t
B	165	260	276	b
B	248	295	282	b
B	165	293	284	b
W	248	279	346	b
B	96	272	281	t
B	248	279	293	b
B	165	255	253	b
W	241	375	377	t
W	241	263	316	t
W	165	340	500	b
B	96	301	273	t
W	241	319	300	t
B	241	281	228	t
B	165	323	283	b
B	241	313	243	t
W	241	291	276	t
B	165	187	100	b
B	165	242	259	b
B	165	100	100	b
W	241	357	366	t
W	241	293	321	t
B	165	280	310	b
W	248	315	329	b
B	165	266	263	b
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B	248	303	285	b
B	96	299	279	t
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B	96	299	306	t
B	248	295	294	b
B	165	352	334	b
B	96	319	325	t
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W	248	314	357	b
W	248	320	298	b
W	248	294	313	b
B	165	326	316	b
B	241	256	262	t
B	165	267	338	b
B	248	216	242	b
W	241	285	274	t
B	96	249	277	t
B	165	274	238	b
B	165	303	292	b
W	248	299	323	b
B	165	311	276	b
B	248	262	270	b
W	248	332	311	b
B	96	295	294	t
B	241	320	292	t
B	241	335	320	t
B	165	193	271	b
B	248	251	276	b
B	165	314	290	b
B	248	256	249	b
B	165	282	334	b
B	165	270	227	b
W	248	246	325	b
B	165	263	288	b
B	241	317	301	t
B	165	359	312	b
B	165	280	294	b
B	165	259	287	b
B	165	338	344	b
B	165	256	304	b

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B	165	320	294	b
B	165	261	266	b
B	96	292	264	t
B	165	255	282	b
B	165	331	346	b
B	165	254	255	b
B	165	315	312	b
B	96	275	261	t
B	96	304	322	t
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B	165	301	294	b
B	165	255	244	b
B	165	284	303	b
B	165	280	303	b
B	165	243	297	b
W	248	342	344	b
B	96	291	300	t
B	96	288	272	t
B	165	289	291	b
W	241	349	398	t
B	165	242	305	b
B	248	243	272	b
B	96	248	278	t
B	165	250	239	b
B	96	285	266	t
B	96	266	285	t
B	165	250	229	b
B	96	315	331	t
B	165	222	174	b
B	96	258	209	t
W	248	172	173	b
B	165	276	227	b
B	248	271	263	b
B	248	227	265	b
B	96	284	246	t
W	248	355	347	b
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B	241	259	247	t
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B	241	284	292	t
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B	96	240	284	t
B	165	255	293	b
W	248	278	324	b
B	96	239	285	t
B	165	258	258	b
B	96	288	284	t
B	96	303	303	t
B	165	282	279	b
B	241	342	324	t
B	241	295	336	t
W	248	327	347	b
B	248	192	100	b
B	165	288	278	b
B	165	305	268	b
B	241	265	100	t
B	165	280	315	b
W	248	329	281	b
W	248	347	372	b

W	248	341	331	b
B	248	307	290	b
W	248	324	352	b
B	248	232	252	b
W	241	308	293	t
W	241	221	288	t
W	241	250	235	t
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B	96	333	330	t
B	96	252	249	t
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B	248	327	352	b
W	248	331	330	b
B	241	308	290	t
B	165	232	250	b
W	241	316	329	t
W	248	292	357	b
B	248	317	301	b
W	241	360	320	t
W	248	338	323	b
W	248	302	321	b
W	241	290	305	t
W	241	329	333	t
B	248	324	331	b
B	241	289	297	t
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B	96	278	257	t
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B	241	290	262	t
B	165	296	324	b
B	165	317	311	b
B	248	309	330	b
W	241	266	282	t
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B	96	282	295	t
B	96	253	310	t
W	248	349	313	b
B	165	314	302	b
W	241	137	179	t
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W	241	382	371	t
B	96	276	281	t
B	96	316	346	t
B	165	283	276	b
B	96	222	247	t
W	241	364	355	t
B	241	289	209	t

B	165	307	291	b
B	165	351	340	b
B	248	239	100	b
W	248	319	320	b
B	165	298	297	b
W	248	318	354	b
W	248	366	342	b
W	248	295	233	b
W	248	269	254	b
B	241	300	247	t
W	165	356	354	b
W	241	334	350	t
B	96	236	276	t
W	248	323	315	b
B	248	307	324	b
B	248	326	330	b
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B	96	223	285	t
B	248	328	282	b
B	248	277	309	b
B	96	270	294	t
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W	96	100	257	t
B	96	290	301	t
W	248	282	308	b
B	165	319	319	b
W	241	298	321	t
B	241	256	238	t
W	248	271	299	b
B	96	214	270	t
B	165	310	327	b
B	165	289	323	b
B	248	269	260	b
B	96	326	270	t
W	241	324	348	t
W	248	288	314	b
B	241	383	362	t
B	96	235	275	t
W	248	280	317	b
B	165	293	297	b
B	248	313	312	b
B	248	278	308	b
B	165	307	312	b
B	241	304	291	t
B	248	304	310	b
W	248	293	318	b
B	165	242	216	b

W	248	325	341	b
B	165	276	314	b
W	241	295	343	t
W	248	325	364	b
W	248	332	324	b
B	96	354	321	t
W	248	286	291	b
W	248	298	283	b
B	165	298	321	b
W	248	217	272	b
B	165	380	319	b
W	241	235	279	t
B	165	294	267	b
W	248	280	297	b
B	165	319	359	b
B	241	291	304	t
B	248	304	331	b
W	241	268	283	t
W	241	323	331	t
B	165	312	303	b
B	96	301	300	t
W	248	281	315	b
W	241	315	309	t
W	165	357	332	b
W	241	338	308	t
B	241	266	267	t
W	241	311	335	t
B	248	276	279	b
B	96	269	268	t
B	248	298	294	b
W	241	329	276	t
W	248	306	305	b
W	248	251	285	b
W	248	279	236	b
B	165	265	280	b
W	248	280	294	b
B	241	232	187	t
B	248	350	308	b
B	96	317	344	t
B	241	340	334	t
B	165	249	277	b
B	165	265	297	b
B	165	347	347	b
W	248	341	357	b
B	241	304	213	t
B	241	268	306	t
B	96	275	265	t
B	241	246	311	t
W	165	309	336	b
W	248	295	255	b
B	165	246	288	b
W	241	304	320	t
B	241	322	353	t
B	165	266	253	b
B	165	335	315	b
B	165	302	284	b
W	248	331	343	b
W	241	300	336	t
B	96	314	296	t
B	96	289	311	t
B	165	295	309	b
W	241	267	292	t
W	248	251	320	b
B	165	342	289	b
W	248	253	242	b
W	241	264	253	t
B	96	246	296	t
B	96	244	283	t
B	248	302	282	b
W	248	290	323	b
B	241	320	315	t
B	248	279	282	b
B	165	263	252	b
B	165	285	285	b
B	165	268	268	b
B	165	342	332	b
W	241	318	328	t
B	165	278	336	b
B	165	329	329	b
W	248	197	284	b
W	248	284	303	b
B	248	338	285	b
W	248	305	285	b
B	165	287	308	b
W	248	309	346	b
B	96	324	314	t
W	248	313	319	b
W	165	347	359	b
W	96	288	322	t
B	241	318	312	t
W	241	280	256	t
B	96	279	290	t
B	248	268	275	b
B	241	325	325	t
B	248	288	313	b
B	248	276	275	b
W	241	365	365	t
W	241	298	308	t

W	248	282	275	b
W	248	286	347	b
W	248	322	364	b
W	248	304	293	b
W	248	287	282	b
B	241	334	321	t
B	248	334	335	b
B	165	304	270	b
W	241	321	337	t
B	96	317	322	t
W	241	335	345	t
W	241	318	334	t
B	96	301	346	t
B	165	301	303	b
B	96	330	324	t
B	96	346	304	t
W	241	340	332	t
W	241	338	360	t
B	241	330	312	t
W	248	308	324	b
B	241	364	348	t
B	248	286	248	b
W	248	315	331	b
B	248	284	299	b
B	165	251	273	b
W	96	309	344	t
B	165	270	275	b
B	165	263	332	b
B	165	210	242	b
B	165	325	335	b
B	165	285	300	b
B	248	235	203	b
W	241	310	313	t
B	165	301	287	b
W	248	271	264	b
W	241	256	277	t
W	241	304	298	t
B	241	287	286	t
B	165	257	257	b
W	248	307	329	b
B	96	221	291	t
W	241	276	296	t
W	248	332	289	b
W	248	268	265	b
B	241	324	331	t
W	248	301	330	b
B	165	219	311	b
B	165	305	343	b
B	241	322	296	t
B	165	195	127	b
B	96	264	326	t
B	241	309	273	t
W	241	291	319	t
B	241	264	179	t
B	165	243	214	b
W	248	286	287	b
B	241	305	293	t
W	248	288	311	b
W	248	257	290	b
B	241	221	219	t
B	241	249	239	t
B	165	320	305	b

BIOGRAPHICAL SKETCH

Bradley Parks McLeland was born November 1, 1962. Bradley was raised in Jacksonville, Florida, and spent considerable time in the United Kingdom. In Jacksonville he attended local schools, including Jacksonville University, where he received a Bachelor of Science degree in geography in 1987 and the University of North Florida, where he received a master's degree in educational leadership in 1997.

Bradley began his career in 1988 as a substitute teacher for Duval County Schools. In 1995, he received a position with Ribault High School teaching economics. In 1999 he was promoted to assistant principal of community education at Ribault High School.

Bradley's interests include traveling and the University of Florida football. In the last decade he has traveled to over 30 countries on five continents and has attended all but one Gator football game.

His doctoral studies were completed in the Department of Educational Leadership, Policy, and Foundations in the area of curriculum leadership.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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This dissertation was submitted to the Graduate Faculty of the College of Education and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August 2001

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